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Applying Interactive Learning Methods on Natural Resources Management Second Year Students, Burie Campus, Ethiopia

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Abstract
Ethiopian students in the classroom have various learning styles. They require inclusive teaching method, since money of them has great problems like family, emotional intelligence, socioeconomic, behavioral and the like problems. The general objective of this study is to apply Jigsaw and cooperative learning approach on academic achievement in NaRM second year students. The draft of classroom action research consists of four stages planning; implementation; observation; and reflection. This study consisted of two cycles the four actions were applied in each cycle Pre-test was carry out which was helps to know the students‟ skill in measurement and assessment methods of soil erosion in the course. For the first cycle the teacher taught using Jigsaw and cooperative learning group technique. In second cycle, students were actively involved. The writer analyzed data by using statistical analysis to know whether the students' academic achievement improved or not. After the researchers implement the use of Jigsaw and cooperative technique in improving students academic performance the collected data was coded and analyzed using mean and mean percentage The problem faced by the researcher in the first cycle were the male students who sat in the backside of the class liked to talk with their group's members, bored, and felt sleepy, although most of group were active. To solve this problem, the teacher gave more attention to the students who sat in the backside of the class, and sometimes the teacher walked around to check every student's involvement. In the pre-cycle test average result was 25.5. In the first cycle, the average result was 78. In the second cycle, the average result was 85. Research can be applied to stimulate and give motivation to improve academic achievement and to be active in the learning process.
Keywords: Burie Campus, interactive learning, jigsaw, cooperative, soil erosion

INTRODUCTION

With many students in the classroom with various learning styles, abilities, and ethnic backgrounds, there is a need to keep all students engaged at appropriate levels. Performance and cohesiveness are extremely vital in a reward system to motivate students (Slavin, 1980). Cooperative learning has emerged as a technique to approach these challenges. Research suggests that students learn more, increase their understanding, and enjoy learning in cooperative learning groups (Burton, 1987; Lee and Jacobs, 1998 in Adams & Hamm, 2005). Cooperative learning has the potential to strengthen intellectual, social, and creative thinking skills in students of all ages.

Documentation of the term cooperative learning in the educational setting is an old idea that has accelerated in recent years (Slavin, 1980). In the 1920s, cooperative learning was being studied in laboratories (Maller, 1929 in Slavin, 1980). At this time the concept of small groups performing together for recognition was being developed into practical programs for educators to use in classrooms. From 1940-1970, cooperative learning was largely ignored (Johnson & Johnson, 2009). Cooperative learning as pedagogy in the classroom began in the 1970s (Slavin, 1995 in Colosi & Zales, 1998). What is your rationale for doing this Action Research? The rationale for this action research was to find a way to accommodate all students who are in my social studies classroom.

The observations that led us to doing action research on cooperative learning and it is impact on education came with having autistic and moderately profound students mainstreamed into my classroom. These students excelled when put into group situations. This lead us to want to research more strategies in cooperative learning that would benefit high ability learners, average ability students and low ability learners students in my classroom in developing engagement and critical thinking skills.

The research into cooperative learning and jigsaw for students does show to have a profound impact on students. This occurs by students taking responsibility for their learning and being accountable. Cooperative learning is based on students being able to reflect on their contributions as well as those of others. Students can learn many skills in this ideology including tolerance, acceptance, motivation, communication and organization. In our modern world, being able to master critical thinking skills in vital; cooperative learning affords situations for students to practice these skills.

The jigsaw strategy, "Provides a cooperative learning environment which fosters learner activity, joint acquisition of content and mutual explaining" (Aronson, Blaney, Stephan, Sikes & Snapp, 1978 in Souvignier & Kronenberger, 2007, p. 756). In the jigsaw strategy, students are first placed in a heterogeneous home or jigsaw group. The teacher then assigns a certain portion or topic of a lesson for each student in the group to become an "expert" on the topic. Then all the students in the room who have the same topic come together as an expert group to study in depth their topic and plan strategies for teaching their topic to the jigsaw group. Students then

return to their home or jigsaw group as the "expert" to explain to the rest of the group or "novices" their topic. Each member of the jigsaw group will teach or explain their topic to their group members. Finally, all students will be given a formative test over all of the material covered (Souvignier, 2007).

In this strategy each student is part of an academic "puzzle" and has the capacity to bring unique knowledge to the group (Lai & Wu, 2006). This strategy addresses the perspective of cognitive elaboration as students explain and paraphrase to others what they have learned. This process strengths retention levels for the expert. In Souvignier & Kroger's study jigsaw showed significant gains from pretesting to post testing (Souvignier & Kroger, 2007). Johnson and Johnson found jigsaw showed significant improvements of achievement in black and Chicano students, positive effects in race relations, and improvement in students' self esteem (Johnson & Johnson, 2009).

Statement of the problem

Cooperative learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it. Cooperative learning is an educational situation where learning occurs while two or more students are working together to complete a common task (Siegel, 2005). It offers educators an option different than a teacher-centered approach; problems still exist in regards to which learning strategies prove to be more effective than others. Level of competence by the teacher implementing the different cooperative learning techniques (Aronson, 2014) student's performances excel when cooperative learning strategies and jigsaw, are implemented. The concern was student's academic achievement effects before and after implementing active learning methods in general and Jigsaw and cooperative learning in particular. With a wide range of student ability in the classroom, there was a need to keep all students engaged during learning time at a challenging optimal level. The purpose of this study was to determine the best cooperative and Jigsaw learning strategies to increase student engagement and involvement in the classroom and their academic performance. One of the major shifts in our classroom was that the researcher as well as the instructor role was changed to being as a facilitator rather than being a traditional lecturer dispersing knowledge with explicit directives. We anticipated that student learning would become more self-directed and self-actuating after implementing Cooperative and Jigsaw learning methods.

The findings of Hwang, Lui, and Tong (2005, p. 152) state "Students in a passive learning environment who were taught using a cooperative learning method significantly outperformed those taught using a traditional lecture format". The teaching of multicultural issues in social studies is highly effective when using cooperative learning (Salko, Eze, & Add, 2013). According to Hedeen, "Jigsawing is a strategy that encompasses positive interdependence, face to face interaction, individual accountability, interpersonal and small group skills (including leadership, decisionmaking, trust-building, communication, and conflict management), and group processing" (Hedeen, 2003, p. 326). A drawback to the jigsaw strategy may be that a student will master his or her topic but fail to teach it to the other students (Slavin, 1995 in Souvignier, 2007). Aggressive or impatient students may disrupt a group by overpowering more timid students (Colosi & Zales, 1998). The instructor will be required to spend more time with this group. The authors also note that absenteeism may have a profound influence on the progress a group makes: however, some groups problem solve and find ways to accomplish tasks even though a member is absent.

There is no any action research which is conducted in DMU Burie campus on the effect of those learning methods effect on students' academic performance particularly in Natural resources management second year students. This is the reason that the researchers motivate to conduct this study in order to evaluate the effect of this approach before and after by delivering tests according to university standards as one test out of 10 percent.

1.1 Purpose of the Study

The study was conducted in Burie Campus. The general objective of this study is to evaluate the effect Jigsaw and cooperative learning approach on academic achievement in NaRM second year students. If the there is a positive effect on students academic achievement using this active learning methods, we researchers might give a recommendation at campus level to promote the finding of this research. This study will be carried out not only theoretically, but also practically. The theoretically result of this study is intended as a useful result for students, Soil water conservation teachers as same researcher and the next researchers.

For the researcher, from the result of this study the researcher hopefully can take and give the benefits of this research to many students. And she can to be a better teacher using this result of this research.

1.2 Objective the research

1.2.1 General objective

The general objective of this study is to apply Jigsaw and cooperative learning approach on academic

achievement in NaRM second year students

1.2.2 Specific objectives

To identify the level of effectiveness of two selected ILs on student academic achievements after acting them

To conceive interactive learning Methods are more successful than the traditional one

1.3Action Hypothesis

In this research, there is an action hypothesis that can be described as follow: The use of Jigsaw and Cooperative group technique can improve students' academic performance and their activeness in the course of Soil and Water Conservation of Natural resources Management second year students in the academic year of 2017/2018.

2.CHPTER THREE RESEARCH METHODOLOGY

2.1 Design of the Study

This study was a classroom action research which is used to analyze the learning activities in the form of an action which is deliberately raised and occurs in a class conducted jointly by teachers and peers (Arikunto, 2007). The draft of classroom action research consists of four stages (1) planning; (2) implementation; (3) observation; and (4) reflection. This study consisted of two cycles, in each cycle consisted of the stages of action research. This research was designed to assess the effects of active learning methods (Jigsaw and Cooperative learning) and outcomes of the students which was achieved by using the above learning methods. The class size of NaRM student is 25 in number.

We have used cooperative learning group and members as organized in the department (which is already existed one to five groups) which is fully focused on academic achievement and sex. As cooperative group, there are five groups having five members in five groups. Among them there is one group leader whose grade is better from group members and one is secretary. We have done Jigsaw learning approach through, students are assigned into groups of 4 or 5, and they can be encouraged to give their group a name that indicates their identity. These groups are their home teams or 'home groups' as stated by Aronson (2006).

This study was classroom action research on the comparison of Jigsaw technique and cooperative learning in academic achievement of NaRM second year, Burie campus in the academic year of 2017/2018. In this study there were two cycles and before conducting the cycle, the researchers gave preliminary test out of 10 percent according to Debre Markos university test standard (the researchers got base score of students' academic score) in the course of soil and water conservation purposely and compared with each cycle after taught using the selected active learning methods. The role of each researcher was; one researcher was course instructor, the second researcher also has other course in this class. All researchers were participated in observation checklist preparation, test preparation with course instructor as same time researcher and gave the test for the targeted class. We decided to implement this action research on the selected course.

The two active learning approaches were employed parallel in first and second cycle. The descriptions of each cycle were discussed as follow:

Pre-cycle: Before conducting this action research, a pre-test was given immediately thought the students on this course out of 10%. The purpose of pre-cycle was to know the students‟ skill, knowledge and attitudes through test.

First Cycle: This activity was employed on April 1, 2018. The researcher was announced the result of the test in pre-cycle result. In this activity, the researcher (teacher) was thought using Jigsaw and cooperative learning technique, it was made students paid attention. Before the teacher do the action, the teacher was began to explain to the students about Jigsaw and cooperative learning technique, gave overview, and how to work with it. Because this research was classroom action research, there were four steps: planning, acting, observing and reflecting.

Second Cycle: This activity was done on April 10, 2018. In this cycle, the researchers prepared planning as well as previous one. The teacher review previous lesson, improve learning tool to improve students activeness and their academic achievement. In this phase, the teaching learning process was evaluated as it ran well or not, were they interested in this technique or not, were they actively involved, were they tries to deliver their arguments to the other groups, can they suggest towards the arguments delivered by them and ask.

2.2 Research Participants

The target groups of this action research were Natural Resources Management second year students in Debre Markos University Burie Campus in the academic year of 2017/2018.

2.3 Sampling Techniques and Sampling Size

The total sample size was twenty-five as one class size. In the class there are 5 females while males are 20. We select this class purposely. We researchers have a course to deliver them. This was the best opportunity in order to apply this action research through usual learning method and using selected active learning methods. Soil and

water conservation is the course selected for conducting this action research based on researchers argument relative to others course in the semester delivered in this class purposely. That is why we researchers select this class in the campus.

2.4 Data Gathering Instruments

The technique of data collection which was used in this study includes observation checklist, documentation and testing by providing test and saving in excel format. In each cycle we have done four activities namely planning, acting observing and reflecting and recording the data. In addition to this we proposed data collection scheme for each stages (planning, acting, observing and reflecting).

2.5 Data Analysis Techniques

The researchers analyzed the data using quantitative data. Quantitative data could be found through conducting test. The writer analyzed data by using statistical analysis to know whether the students' academic achievement improved or not. After the researchers implement the use of Jigsaw and cooperative technique in improving students academic performance the collected data was coded and analyzed using mean and mean percentage as shown in equation 1 and 2.

$$\text{Mean}=\sum \left(\frac{X}{N}\right) \text{----------1}$$

Where: X is sum of student result and N is the total size of the student in each cycle.
After getting the mean of each element in scoring value of the test, the researcher formulated the result to get the total mean score as follow;

$$\text{Mean}= \sum (X/N) * 100\% \text{----------2}$$

After getting the mean of each element in academic achievement in the course of Soil and water conservation the researchers formulated the result to get the total mean score as follows;

$$Mxt = \frac{\sum xt}{Smax} \times 100\%$$

Mxt =the mean of total score
Sum of Xt=the number of total
Smax=maximum score for the test
Then the percentage of each component in writing hortatory exposition text was consulted with the following criterion. According to Sutrisno Hadi (2004), the criterions are as follow:
Table 1: The Criterion of academic achievement skill

The percentage of ability	**Criteria**		
85%-100%	4	A	Excellent
75%-84%	3	B	Good
60%-74%	2	C	Fair
40%-59%	1	D	Poor
0%-39%	0	F	Fail

Based on the table above, the researchers determined the level of the students' academic achievement based on test value changed into percentage. First step, the researcher got score using conventional or teacher center method from pre-cycle, the teacher was Soil and Water conservation teacher himself, then mean of score using conventional method was compared with mean of score from one cycle. Mean of score from one cycle was compared with mean of next cycle, and so on until the last cycle. It was to know how far the progress of students in this research.
Indicators of Achievement
This study was said to be success if the research objectives' indicators were reached. In this research, the researcher formulated the research objectives' indicators as below:
1. Students' academic performance in the course of soil and water conservation is increasing or improved after the students are taught by Jigsaw and cooperative technique as compared with pre-cycle and within each cycle. The increasings are in the percentage, participation and individual responsibility and group work habit.
2. Jigsaw and cooperative learning technique can enhance students' activeness on teaching learning activities on

the course of SWC.
3. Students' result with the minimum standard of score (60% to 74%).

2.6 Proposed Action Strategies

The proposed action strategies in this study which was used were Jigsaw technique and Cooperative learning methods for the aim of improving students' academic performance and activeness or not in case of NaRM second year Burie campus, DMU. There are strategies that can be used by the teachers as same time researchers under sunshade of cooperative learning process, some of them have gained more popularity than others, including; Student Teach Achievement Division (STAD), Jigsaw II and Teams-Games-Tournaments (TGT). Essence of all cooperative learning activities is that in each case the students are divided in heterogeneous groups based on their learning capability, where they support each other for learning (Slavin, 2010). A brief description of activities along with evidences from research about their effectiveness is given below in section 3.7.

2.7 Ways of Implementing Action strategies

Jigsaw

It is a team activity, where one type of the members are responsible for mastering their own part of material, while experts are responsible for teaching their material to other members of the group. Only difference between Jigsaw I and II is that the expert takes test before returning to home group (Şahin, 2010). After this the scores of each member are produced on the basis of tests, and then accumulative score of whole team is calculated with reference of individual scores. The research has also supported usefulness of Jigsaw II method for improving academic performance of EFL learners (Gomleksz, 2007).

Student Teach Achievement Division

This can be termed as most simple form of cooperative learning, where teacher give material to students and they learn it as group. The groups are test and scored individually and collectively, the team securing high scores is termed as winning one (Arends, 1997). One strategy adopted during cooperative learning as instruction approach is STAD. The research studies carried out by Jolliffe (2005) reported its effectiveness for improving academic achievement and social skills. Similar results have been reported by Vaughan, 2002, Jacobs et al., 2003 and Van Wyk, 2010.

3 CHAPTER FOUR RESEARCH FINDINGS AND ANALYSIS

3.1 Research Findings

In this chapter, the researchers would like to describe and discuss the findings of the research. This study is classroom action research on the use of selected active learning approach Jigsaw and Cooperative leaning technique simultaneously for comparison of their effect before and after in the course of Soil and water conservation course. Its purpose is to know the implementation effect of Jigsaw and Cooperative learning technique in students' academic achievement and to identify the enhancement of students' activeness, especially at Natural Resources Management Second year student in Burie Campus in the academic year of 2017/2018. In this study there were two cycles and before conducted the cycle, the researcher gave preliminary test (the researcher got base score of students writing skill) and compared with each cycle after being taught using jigsaw and cooperative learning methods. The descriptions of each cycle are as follow:

1. Pre-cycle

Before conducting this action research, a pre-test was given. The purpose of pre-cycle was to know the students‟ skill in measurement and assessment methods of soil erosion in the course of Soil and water conservation. Pre-cycle test was conducted on Friday, 28 March 2018. There were 20 students who followed the test.

In this meeting, the teacher was done teaching learning process as usually was done by the teacher (teacher learning center). The teacher began the learning process by introducing soil erosion assessment techniques using English language feature and generic structure. But, many students did not pay attention to the teacher. They made noisy in the class, such as talking with other friend and they did other activity that was not related with the learning activity. There were only some students who were active to ask and respond teacher's questions. They were Aafewerk Welay, Serkalem Mamo, Amanuel Ale, and Abrha Gebreabezgi.

After explaining the material to students, students had to give the answer for the test after a class immediately on soil erosion assessment methods within 30 minutes. The purpose of the test was to measure the skill of the students in response to the session, to know students‟ basic score of test when they taught using conventional technique, and to know their activeness during learning process using conventional technique.

After implementing the test, the researcher examined the answer sheet and finds the result.

Table 2: Students Score in Pre-Cycle

No.	Student' code	Score	
		10%	100%
1	B-1	1	10
2	B-2	1	10
3	B-3	9	90
4	B-4	10	100
5	B-5	7	70
6	B-6	1	10
7	B-7	1	10
8	B-8	Absent	Absent
9	B-9	0	0
10	B-10	0	0
11	B-11	Absent	Absent
12	B-12	Absent	Absent
13	B-13	Absent	Absent
14	B-14	2	20
15	B-15	10	10
16	B-16	1	10
17	B-17	2.5	25
18	B-18	1	10
19	B-19	10	100
20	B-20	1	10
21	B-21	1	10
22	B-22	1	10
23	B-23	1	10
24	B-24	Absent	Absent
25	B-25	1	10
Total score			505
Maximum score			100
Minimum score			0

$$\text{Mean} = \sum X/N$$

Explanation:
M: the average of the students‟ score
ΣX: total score
N: the number of students
M=505/20
M=25.5
After getting the mean of each element in academic achievement in the course of Soil and water conservation the researchers formulated the result to get the total mean score as follows;

$$Mxt = \frac{\sum xt}{Smax} \times 100\%$$

Mxt =the mean of total score
Sum of Xt=the number of total
Smax=maximum score for the test
Mxt=(25.5/100)*100%=25.5% which is less than 30%

The average score of the students‟ test for pre cycle test was 25. 5%. It meant that the result was fail. It lies between 0% to 39%. It did not mean that the result was enough, because it was lower than the criterion that has been stipulated which is Lowest Class and status description is fail according to DMU grading system.

The students' academic achievement was not substantive. They could not score the minimum standard value, the way they express their ideas was still narrow and sometimes the development of content was confusing. The students were also poor in conducting calculation and some of students did not use and write the formulae even and some are also write un related sentence on describing questions.

The researchers also observed students activeness in this pre-cycle that would be compared in the first cycle of applying Jigsaw and Cooperative group technique. The result of students‟ activeness based on the observation checklist was as follows:

Table 3: Score of Observation in Pre-Cycle

No.	Indicators	Non 0%	Few <20	Many 20-40	Half 50	Most 60-80	All 100
		0	1	2	3	4	5
1	Students involve in group work actively.		✓		✓		
2.	Students ask question to either teacher or their peers to clarify their understanding.		✓				
3	Students solve the problem in a group work.			✓			
4	Students answer questions.			✓			

Score = (Total Score/ Maximum Score) x 100%, where total score is 9 and maximum score is number of class size.

Score = (9/25) x 100%=36%

The result of the observation checklist was 36%, it meant poor. The researchers concluded that the students did not really interest with the method used by the teacher. Based on the observation in this activity, most of the students had difficulties to do it. After doing the test, researcher decided to use another technique to make students interested and enjoyed the class in order to enhance students‟ activeness and academic achievement, the technique is jigsaw and cooperative learning approach. The researchers considered that by giving continuous enhancement to the students they would get better result, and the researchers were also aware that teachers' ability to carry out the material in teaching learning process is an important part.

2. First Cycle

This activity was done on April 1, 2018. The teacher announced the result of yesterday's test result. Knowing the students‟ result from the pre cycle was not satisfied enough or poor. The teacher told the students‟ score of the test was not satisfying enough and it did not reach the KKM (Kriteria Ketuntasan Minimal/ Minimum Passing Grade Criteria). In this activity, the teacher taught using Jigsaw and cooperative learning group technique, it made students paid attention. Before the teacher did the action, the teacher began to explain to the students about Jigsaw and cooperative learning technique and benefits, gave overview, and how to work with it. First time, the students faced difficulties about the teacher meant, but not long after that, by brief explanation from the teacher, students can understood and got the point of Jigsaw and cooperative group technique. The former was new but the latter one was not for the class. Because this research was classroom action research, there were four steps: planning. Acting, observing and reflecting.

a. Planning

In the planning step, the researcher prepared the teaching learning design, such as, arranging lesson plan based on the teaching material. Then researcher prepared the teaching learning process resources, such as the materials, the example of soil erosion assessment and measurement methods, the test, observation checklist list in order to know students activeness in joining teaching learning process and students‟ attendance.

From the planning above, the teacher used lesson plan as the form to implement the action was done. In the first cycle, teacher used soil erosion assessment methods by the title of " Generalized, Detailed and semi detailed methods".

B.Acting

In this step, researcher conducted activities according to the schedule that was arranged in planning stage. As acting, researcher began the class by giving some explanations that is related to the material in order to bring them understanding the whole material well. After that the researcher divided students into 5 groups and gave a topic "Rainfall erossivity factor on soil erosion assessment" that would be discussed by students in their cooperative group in 10 minute and after the first 10 minute they form another new group having 5 members that is Jigsaw group. After having such group discussion students guided by the researcher to have other new discussion which was Jigsaw group discussion in 20 minute. Researcher asked students to make a group discussion based on the information obtained from cooperative learning as they got during the discussion.

C.Observing

In this stage the researcher observed the students‟ activeness while they were been taught using jigsaw and cooperative group technique. It was observed by the observation scheme made by the researchers to monitor and evaluate students‟ eagerness and engagement during learning process. The purpose of this activity was to evaluate the results, collect the data and monitor the teaching learning process. The score of observation were as follow:

Table 4: Score of Observation in Cycle 1

No.	Indicators	Non 0%	Few <20	Many 20-40	Half 50	Most 60-80	All 100
		0	1	2	3	4	5
1	Students involve in Jigsaw group work actively.						✓
2	Students involve in cooperative group work actively.				✓		
3	Students ask question to either teacher or their peers to clarify their understanding.					✓	
4	Students solve the problem in a group work.					✓	
5	Students answer questions.			✓			

Score = (Total Score/ Maximum Score) x 100%, where total score is 18 and maximum score is number of class size.

Score = (18/25)x 100%=72%

According to the result of the observation above could be concluded that students‟ activeness enhanced from the pre-cycle result and it showed that most of students joined the class enthusiastically. It meant good. They paid attention to the lesson, although some students made noisy when discussed about the topic. This assures that jigsaw and cooperative learning have positive effect on academic achievement.

d. Reflecting

Based on the activity during cycle 1, the researcher noted that there were some problems those should be solved in the next cycle, the problems were as follow:

1) Because of the results based on the observation checklist in the first cycle was not satisfying enough, the teacher and the researchers discussed about the activity in the next cycle to solve the problems, especially in students‟ activeness during jigsaw and cooperative learning discussion. 2) The media used should be changed to engage students‟ interest in learning soil erosion assessment and measurement using Power point to show videos and they are actively involved during learning process. 3) When the activity in progress, the researcher found some students were passive in group. They were not fully joining in the group. It was the duty of the teacher to give more attentions and motivation toward the students in order to have a will or interest to join in group work activity. It can be done by calling their name and approached them, and asked their problems related to the theme that may influenced to their activeness. This was done by the researchers.

After the whole activity had finished, the researchers assessed the students‟ test result. The result of the soil erosion assessment and measurement test in cycle- I was as follow:

Table 5: Score Test in Cycle-I

No.	Student' code	Score	
		10%	100%
1	B-1	8	80
2	B-2	Absent	Absent
3	B-3	6	60
4	B-4	10	10
5	B-5	10	100
6	B-6	6	60
7	B-7	8	80
8	B-8	Absent	Absent
9	B-9	Absent	Absent
10	B-10	8	80
11	B-11	Absent	Absent
12	B-12	Absent	Absent
13	B-13	Absent	Absent
14	B-14	Absent	Absent
15	B-15	10	100
16	B-16	6	60
17	B-17	6	60
18	B-18	10	100
19	B-19	10	100
20	B-20	6	60
21	B-21	10	100
22	B-22	10	100
23	B-23	10	100
24	B-24	Absent	Absent
25	B-25	8	80
Total score			1330
Maximum score			100
Minimum score			60

$$\text{Mean} = \sum \text{X/N}$$

Explanation:
M: the average of the students‟ score
ΣX: total score
N: the number of students
M=1330/17=78%
M=78
After getting the mean of each element in academic achievement in the course of Soil and water conservation the researchers formulated the result to get the total mean score as follows;

$$\text{Mxt} = \frac{\sum \text{xt}}{\text{Smax}} \times 100\%$$

Mxt =the mean of total score
Sum of Xt=the number of total
Smax=maximum score for the test
Mxt=(78/100)*100%=78% which is between 75%-84% percentage ability and status description is good.
From the result above, it was clear that the average of students‟ test result of the first cycle was 78%, it was good. There was enhancement comparing to the pre-cycle. But the students still had difficulty to have a good result and response on workout and essay type questions. Hence, the researchers decided to conduct the next cycle and the teacher intended to give better explanation to them.
3. Second Cycle
This activity was done on April 10, 2018. In this cycle, the researcher prepared planning as well as previous one. The teacher reviewed previous lesson, improved learning tool to enhance students‟ activeness and writing skill.

In this phase, the teaching learning process ran well. The students were interested in this technique. In this cycle, students were actively involved; they tried to deliver their arguments to the other groups, caught what their friends‟ suggested towards the arguments delivered by them, wrote every suggestion given by their friends and understood about soil erosion assessment and measurement methods.

a. Planning

The researchers and the teacher one of the members of the researchers, started the lesson by motivating the students and the researcher also announced the result of yesterdays test result. The teacher told the students score of the test was better than the pre-cycle score. In this stage, researchers prepared the learning instrument such as follows:

1) Lesson plan based on the teaching material
2) Test
3) Observation scheme
4) Students attendance list

In this cycle the researcher gave different theme of soil erosion and measurement methods. The activity was same with the previous cycle. The teacher/researcher divided students into 5groups; each group consisted of 5 students for implementation of both jigsaw and cooperative learning approach simultaneously. In this cycle, researchers changed the media used as the stimulus before starting the discussion. The theme/topic of discussion would be closely related to the theme of the media used.

b.Acting

In this step, researchers conducted activities according to the planning that was arranged. As acting, researchers began the class by reviewing the material, and gave more explanations to the question proposed by students. After knowing all of students understood the material, researcher began to divide students into 5 groups;, and gave a topic “Soil erosion risk assessment methods!” that would be discussed by students in their jigsaw an cooperative groups. After having jigsaw and cooperative groups discussion students guided by the researchers to have bigger discussion which was class discussion.

Researchers asked students to make group discussion based on the result they got during the discussion, but in the different topic that closed to the discussed topic that was “Predicting soil erosion (USLE-model)”

c. Observing

In this stage the researchers observed the students‟ activeness while they were been taught using jigsaw and cooperative group technique. It was observed by the observation scheme made by the researchers to monitor and evaluate students‟ eagerness and engagement during learning process. The purpose of this activity was to evaluate the results, collect the data and monitor the teaching learning process. The score of observation were as follow:

Table 6: Score of Observation in Cycle-II

No.	Indicators	Non 0%	Few <20	Many 20-40	Half 50	Most 60-80	All 100
		0	1	2	3	4	5
1	Students involve in Jigsaw group work actively.						✓
2	Students involve in cooperative group work actively.				✓		
3	Students ask question to either teacher or their peers to clarify their understanding.						✓
4	Students solve the problem in a group work.					✓	
5	Students answer questions.						✓

Score = (Total Score/ Maximum Score) x 100%, where total score is 22 and maximum score is number of class size.

Score = (22/25) x 100% =88%

According to the result of the observation above and compared with the previous observation. It could be concluded that almost all of students joined the class enthusiastically. It meant very well than the first cycle. They paid attention to the lesson and enthusiastically involved in the discussion and group work, they could ask questions or answer their friends‟ questions and even responding to the insufficient arguments from the other group. They enjoyed learning the material with jigsaw and cooperative group technique.

d.Reflecting

The result of the second cycle disproved that the reflections in the first cycle were answered in the second cycle. It was also better than previous one. There was an enhancement in this cycle. The condition of the class was getting better. The students‟ activeness enhanced. They listened to the teacher’s explanation and did not make noisy in learning activity. The students took active part in group and can associate with the group’s members. After implementing the test, the researchers examined the answer sheets and found the results.

Table 7: Score Test in Cycle -2

No.	Student' code	Score	
		10%	100%
1	B-1	8.5	85
2	B-2	5	50
3	B-3	8.5	85
4	B-4	10	100
5	B-5	8.5	85
6	B-6	10	100
7	B-7	10	100
8	B-8	5	50
9	B-9	10	100
10	B-10	10	100
11	B-11	10	100
12	B-12	8.5	85
13	B-13	8.5	85
14	B-14	10	100
15	B-15	10	100
16	B-16	10	100
17	B-17	8.5	85
18	B-18	5	50
19	B-19	10	100
20	B-20	2.5	25
21	B-21	8.5	85
22	B-22	8.5	85
23	B-23	8.5	85
24	B-24	8.5	85
25	B-25	10	100
Total score			2125
Maximum score			100
Minimum score			25

$$\text{Mean} = \sum \text{X/N}$$

Explanation:
M: the average of the students‟ score
ΣX: total score
N: the number of students
M=2125/25=85
After getting the mean of each element in academic achievement in the course of Soil and water conservation the researchers formulated the result to get the total mean score as follows;

$$\text{Mxt} = \frac{\sum \text{xt}}{\text{Smax}} \times 100\%$$

Mxt =the mean of total score
Sum of Xt=the number of total
Smax=maximum score for the test
Mxt=(85/100)*100%=85% which is between 85%-100% percentage ability and status description is excellent.
The result above showed that the result of the second cycle was better than the previous one. The result was 85%, it was excellent. However, there was enhancement for the students‟ activeness and skill in soil erosion assessment and measurement methods, although it should be step by step. The researchers concluded that the problems have been solving using jigsaw and cooperative group technique. Using thus approach group technique eased students to write especially the essay and workout questions accordingly because the students were not confused to gain the arguments after having discussion with their jigsaw and cooperative group. The students also can work in group and discuss with their friends actively and devotedly.

B. Research Analysis

After the researchers implemented the use of jigsaw and cooperative group technique in comparison of students‟ academic achievement, the researchers got the data, it was analyzed of first cycle and second cycle, and the researcher got the result of Classroom Action Research.

The first cycle was about teaching and learning process and the assessment test. The theme was “Soil erosion assessment and measurement methods”. In this cycle the teaching and learning process was begun. The problem faced by the researcher in the first cycle were the male students who sat in the backside of the class liked to talk with their group’s members, bored, and felt sleepy, although most of group were active. To solve this problem, the teacher gave more attention to the students who sat in the backside of the class, and sometimes the teacher walked around to check every student’s involvement. This was what a teacher should be done in teaching writing in line with the theory stated in the chapter III.

A teacher must motivate, provoke, support and respond to the problems faced by students during learning process. In discussion phase, the students were not excited in delivering their arguments to other groups. In the individual task with the closed topic of the discussion topic, students felt confused to arrange the content. They had difficulty to have good organization of content. The second cycle was the same with the first cycle. It was about teaching learning process and the assessment test, but the materials and task were different from the second cycle.

Based on the result of second cycle, it could be concluded that many students joined the class willingly. The students were not only keen in discussing the topic given in their jigsaw and cooperative learning ,but also students could communicatively respond to other group’s arguments. In the individual task, students could explore their arguments after having a talkative discussion with other groups. They also could manage their previous problem “content organization” pretty well. In this second cycle, the teaching learning process ran well. The researchers concluded that the problems have been solving used jigsaw and cooperative group technique to enhance students activeness and there score value. Using such active learning techniques gave easier for the students to have high score value because the students were not confused to gain the arguments must be provided after having Jigsaw and cooperative discussion and class discussion too. The students also could work in group actively and discuss with their friends communicatively.

Table 8: Enhancement the Average of Students‟ Score on Pre Cycle, Cycle 1 and Cycle 2

No.	Student code	Pre-cycle	Cycle-1	Cycle-2
1	B-1	10	80	85
2	B-2	10	Absent	50
3	B-3	90	60	85
4	B-4	100	10	100
5	B-5	70	100	85
6	B-6	10	60	100
7	B-7	10	80	100
8	B-8	Absent	Absent	50
9	B-9	0	Absent	100
10	B-10	0	80	100
11	B-11	Absent	Absent	100
12	B-12	Absent	Absent	85
13	B-13	Absent	Absent	85
No.	Student code	Pre-cycle	Cycle-1	Cycle-2
14	B-14	20	Absent	100
15	B-15	10	100	100
16	B-16	10	60	100
17	B-17	25	60	85
18	B-18	10	100	50
19	B-19	100	100	100
20	B-20	10	60	25
21	B-21	10	100	85
22	B-22	10	100	85
23	B-23	10	100	85
24	B-24	Absent	Absent	85
25	B-25	10	80	100
Sum		505	1330	2115
Average Mean		25.5	78	85

Based on data collected in general the active learning process ran well. There were some significant enhancements from pre cycle to cycle one to cycle two, whether in the students‟ activeness and students score. In the pre-cycle, all of students have been doing the test, and the average result was 25.5. In this activity, the teacher used conventional method. The researchers did not use neither jigsaw nor cooperative technique as teaching method.

In the first cycle, the average result was 78. The researchers began to use jigsaw and cooperative technique to teach the students. In the first cycle using of jigsaw and cooperative technique, the students' average enhanced by 32.05% as compared with the pre-cycle one.

The students also actively involved in the learning process from the beginning until the discussion phase and closing. Although in the beginning of the lesson, some of students tended to converse with their chair mate especially the male students who sat in the back side, they could finish their group and individual work well.

In the second cycle, the average result was 85. Before the lesson began, the researchers asked the students to pay attention more to the lesson. All activities in this cycle was ran well. It showed that there were some significant enhancements in the students‟ achievement (91.76% as compared with first cycle and 30% improvement of academic achievement as compared with pre-cycle average result. Furthermore, there was also enhancement from pre cycle until cycle two. This could be a proof for Vigotsky‟s theory, he tried to develop Piaget‟ sconstructively individual learning model theory in his theory became group learning that is to build the knowledge itself, and students can get the knowledge from various activities with teacher as the facilitator (Saminanto, 2010).

The researchers felt that the implementation of jigsaw and cooperative group technique as teaching technique to compare students‟ academic achievement and improve activeness as well as skill in the couraes of Soil and water conservation particularly chapter-III was successful, because jigsaw and cooperative group technique is interesting teaching technique to the students. It engaged students directly to involve in the learning process by having jigsaw and cooperative group discussion. So, jigsaw and cooperative group is helpful in the process of improving academic achievement of students and their activeness. The academic achievement could be seen taught the histogram as follow:

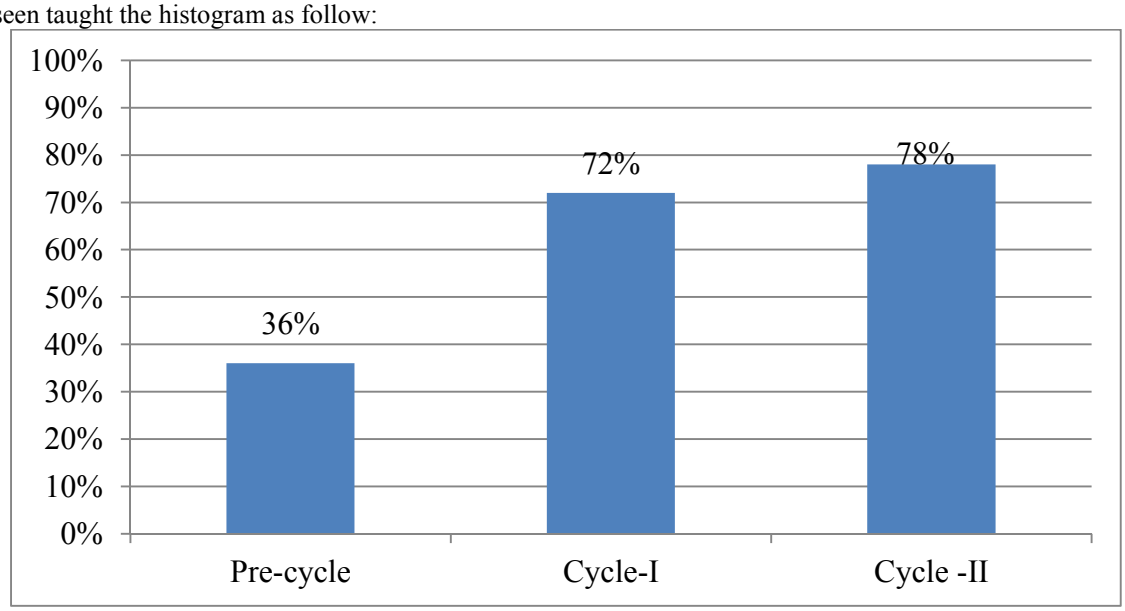

Figure 2: Diagram of the Whole Test

From the diagram above, the researcher concluded that there was an enhancement on students‟ skill in writing after taught using buzz group technique. From pre cycle showed that students‟ achievement was 25.5 it meant that was fail ability in some students. In the cycle I showed that there was increasing students' achievement up to 78. It meant good. From cycle II the students‟ enhancement increased more up to 85.

It was also happened to the students,, activeness based on the observation checklist. In the pre-cycle, students‟ activeness was 36%, it meant fair and there was no half of total students actively involved in the learning process. After being taught in the first cycle using buzz group technique, students‟ result of observation was 72%. It meant most of students involved in the learning process using jigsaw and cooperative learning. In the second cycle, the observation of students‟ activeness increased. It was 88 and it meant almost all of students involved in the learning process actively. It meant there was enhancement in every cycle after using jigsaw and cooperative learning group technique whether in the students‟ academic achievement score value and activeness. The effect of active learning methods on students' activeness using observation checklist could be seen taught the histogram as shown in Figure 2.

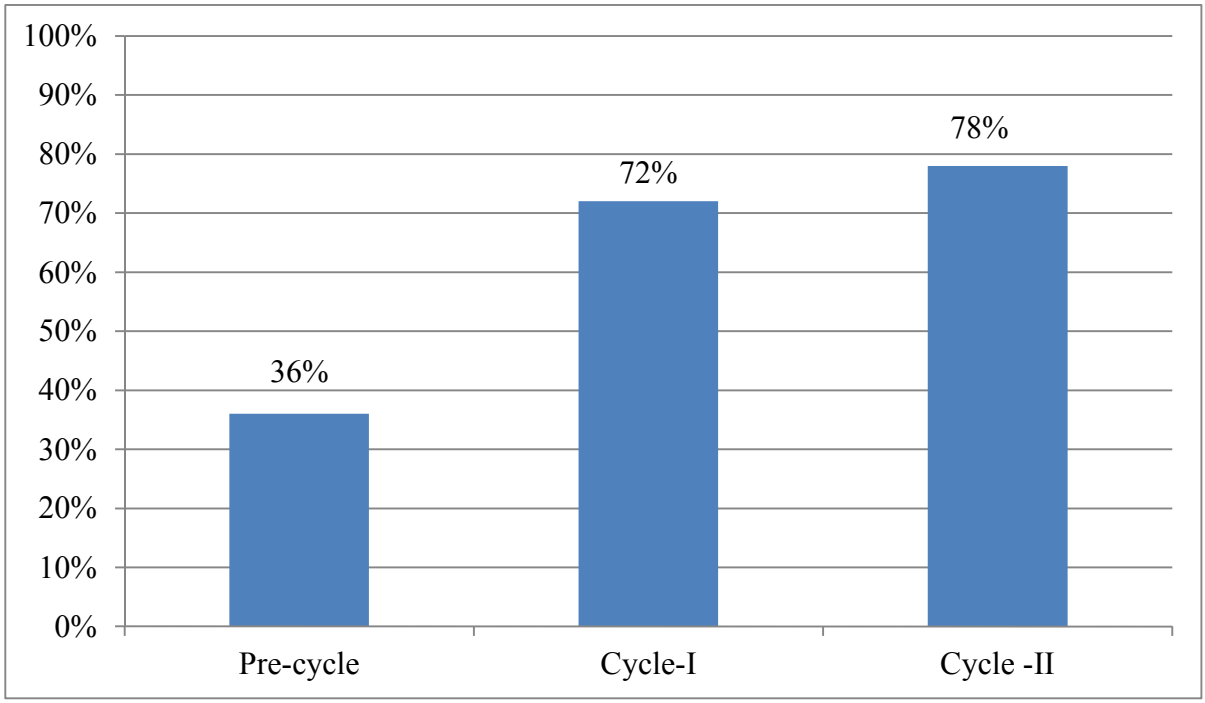

Figure 3: Diagram of the students' activeness before and after active learning methods

4 CHAPTER FIVE CONCLUSIONS AND SUGGESTIONS

4.1 Conclusions

Based on the result of the research that had been done in two cycles in the research entitled "Comparison of selected Active Learning Methods on the Academic Achievement: the case of Natural Resources Management Second Year Students, Burie Campus, Ethiopia in the Academic Year of 2017/2018). It can be taken the conclusions as follows:

(1) The implementations of jigsaw and cooperative group technique that had been done in two cycles in this research can be applied to stimulate and give motivation to improve academic achievement and to be active in the learning process. It can be seen by the different significance of students' activeness and score difference between first cycle to the second cycle.

The implementation of jigsaw and cooperative technique to analyze the effect of students' activeness and academic achievement has been applied through action research, they are: The enhancement of learning tool, teachers chooses interesting chapter with topics in every cycle. Motivate students to discuss in group, trigger students' critical thinking and train students to speak in front of their friends. So, every student can learn how to respect and respond other person's arguments. Since the students accustom to think individually, teacher should motivate students to discuss the writing material and discuss in group when they are assigned to do the group work. Motivate the inactive students and encourage female students to be more active during the lesson. This is related to the students' activeness and responds in skill by providing test. Students' engagement in students' in group work. This is related to students' effort to understand the topic. Students' skill in writing not only in the topic, but will be developed best in association with speaking, listening, and speaking activities. It helped the students to write a meaning full answer for the question easily and accurately, because they are not confused about the theme given by the teacher.

(2) Using jigsaw and cooperative learning group technique can improve students' academic performance. There is an improvement. It showed by the score of pre-cycle, first cycle and second cycle. In the pre-cycle was found the total score of test result was 25.5, it meant was 25.5%. It showed that the value of students' academic result was fail. In the first cycle was found the total score of students' writing result was 78, it meant was 78%. It showed that the value of students' academic achievement was good. In the second cycle was found the total score of students' writing result was 85, it means was 85%. It showed that the value of students' test result was excellent.

(3) Using jigsaw and cooperative group technique can improve students' activeness. There is an enhancement. The students' activeness enhanced after being taught by using jigsaw and cooperative group technique. They could actively involved in the discussion with their friends, whether in the small group (jigsaw group and cooperative group) or in the big one (class discussion). Students also joined the class earnestly and engaged themselves in the whole activities of using jigsaw and cooperative group technique to learn. It can be seen by the

observation checklist during the pre-cycle, first and the second cycle. In the pre-cycle was found the total score of students' activeness was 36%, it meant fail. In the first cycle was found the total score of observation checklist of students' activeness was 72%, it meant good. It also showed that the students' activeness increased. In the second cycle found the result of students' observation checklist was 88%. It showed that almost all students enhanced their activeness after taught using jigsaw and cooperative learning technique, and it meant that excellent.

4.2 Suggestions

There are some suggestions especially for students in order to improve students' activeness and their academic achievement:

1. To the teachers

Teachers should use jigsaw and cooperative group technique as a teaching method. By using jigsaw and cooperative group technique, teacher can expect the students' activeness and academic result well. Teachers are expected to develop the teaching of any other course by increasing the exercises in actively participation and group work. Teacher should give more attention to the students in academic performance and activeness in all courses. Teachers are expected to motivate to the students in class participation, because it will be affected to the students' academic achievement in the learning process.

2. To the students

Students should be interested in active learning methods of jigsaw and cooperative, so they enjoyed along learning. Students have to learn and enhance their activeness and result score using jigsaw and cooperative group technique. Students should extend their skill in many ways, e.g. writing the group work activity and answering the questions accordingly in the classroom activities or their daily life, or even by drilling some new words. So finally, students are able to improve their academic achievement and participation.

3. To other researchers

This research was conducted by using two active learning methods (Jigsaw and Cooperative learning approach simultaneously), therefore other researchers should conduct this type of research on sole learning methods to assess the effect of each inter-active learning on students activeness and their academic improvement.

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